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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,314	09/03/2003	Sway Chuang	681954.0134	4376
570. 7590 05/01/2008 PANITCH SCHWARZE BELISARIO & NADEL, LLP ONE COMMERCE SQUARE 2005 MARKET STREET, SUITE 2200 PHILADELPHIA, PA 19103				
EXAMINER GORDON, BRIAN R				
ART UNIT		PAPER NUMBER		
1797				
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05/01/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/654,314

**Applicant(s)**

CHUANG ET AL.

**Examiner**

Brian R. Gordon

**Art Unit**

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 2-26-08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 21-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/02)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### **Continued Examination Under 37 CFR 1.114**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 26, 2008 has been entered.

### **Response to Arguments**

2. Applicant's arguments with respect to claims, 1, 3-6, 15, and 18-20 have been considered but are moot in view of the cancellation of the claims. New ground(s) of rejection are given herein for the new claims.

### **Claim Rejections - 35 USC § 112**

3. Claims 21-33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim implies that at EVERY chamber in the device includes is connected with four channels that are also to another chamber. Applicant fails to point where there is support for such in the original application. If EVERY/EACH chamber is connected to four other different chambers, there would be no termination in the chain or array of chambers. There has to be some point at which

the array terminates such the chambers on the outer boundary of the array are not each connected to four subsequent chambers. The claim as drafted suggests the device can incorporate an infinite number of chambers. This is not supported by the specification. The instant application describes a finite number of four chambers 14a-d. There is no indication that any subsequent chambers are further connected in the manner as suggested in the claim.

Furthermore in reference to the phrase **"each connection channel connecting at least one chamber to another chamber"**, this does not exclude multiple or all four channels from being connected to the same "another channel". While the claim allows for such an interpretation, the specification does not. The specification describes a specific embodiment as shown in the figures. However, the scope of the claims is broader than what the application supports. Furthermore the above quoted phrase suggests each channel can connect more than one chamber to a subsequent another chamber. This not supported by the specification or drawings.

While the specification discloses the use of suction pump 19a and positive pump 19b, the examiner fails to located where the specification supports each chamber including a pump as claimed.

4. Claims 2-33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not support an array of an infinite number of chambers

and channels (as explained above). The claim does not recite a finite number of chambers as such it is unclear how each/every channel can be connected to different subsequent chambers.

While the claims are considered to be improper for the reasons given above the examiner has provided the following possible rejections in anticipation of applicant making further amendments, the following rejections have been given.

**Claim Rejections - 35 USC § 103**

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 21-22, and 26-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Quake et al. US 2006/0019263.

Quake et al. discloses apparatuses that comprise microfabricated channels to which polynucleotide templates to be sequenced are attached. Optionally, the apparatuses comprise plumbing components (e.g., pumps, valves, and connecting channels) for flowing reaction reagents. The apparatuses can also comprise an array of reservoirs for storing reaction reagents (e.g., the polymerase, each type of nucleotides, and other reagents can each be stored in a different reservoir).

An embodiment of a microfluidic chip fabricated according to this Example is shown schematically in FIGS. 29A and 29B. More specifically, FIG. 29A shows microchannels defining a flow layer (304) and a control layer (306), as well as a derivatization tree (308) and a sequencing tree (310). FIG. 29B shows a valve system corresponding to the microchannel system of FIG. 29A. The valves (312, 312') are

formed where wide control segments (313) cross over flow segments (314) and control the flow of reagents into and out of the sequencing chambers. The derivatization reagents build up the surface chemistry in all sequencing chambers (315) at the same time. (paragraph 0234).

While each of the connecting channels are not shown to be connected to subsequent chambers, it would have been obvious to one of ordinary skill in the art at the time of the invention to recognize the number of chambers in the array maybe modified as such to allow for multiple processes in the same duration as required for one. (see paragraphs 249-250).

7. Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quake et al. as applied to claim 21 above, and further in view of Saltsman et al. US 2005/0106066.

Quake et al. does not disclose the device as being laminated.

Saltsman et al. disclose microfluidic devices and methods for manipulating and analyzing fluid samples. The disclosed microfluidic devices utilize a plurality of microfluidic channels, inlets, valves, filter, pumps, liquid barriers and other elements arranged in various configurations to manipulate the flow of a fluid sample in order to prepare such sample for analysis (abstract).

Microfluidic devices may be constructed in a multi-layer laminated structure wherein each layer has channels and structures fabricated from a laminate material to form microscale voids or channels where fluids flow [0007].

It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize microfluidic devices such that of Quake et al may be laminated as taught by Saltsman et al.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tacklind, Christopher Andrew et al.; McBride, Lincoln et al.; Unger, Marc et al.; and Van Dam, Michael et al. disclose microfluidic devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, 1st Fri. Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 1797

/Brian R Gordon/  
Primary Examiner  
Art Unit 1797